

WE CLAIM:

1. For use with an optical microscope, a stage assembly mountable on an optical microscope for orienting a sample into a desired focal position comprising:

an X-axis plate operable for rectilinear shifting in the X-axis direction;

5 a Y-axis plate mounted on the X-axis plate operable for rectilinear translation in the Y-axis direction;

a Z-axis plate mounted on the XY plate assembly for carrying a sample to be investigated; and

piezoelectric actuator mechanism interposed between the XY plate assembly
10 and the Z-axis plate operable for rectilinear translation the Z-axis plate.

2. The stage assembly of claim 1 wherein the piezoelectric actuator mechanism includes three spaced-apart portions for engaging the Z-axis plate.

15 3. The stage assembly of claim 1 wherein the X-axis plate, Y-axis plate and Z-axis plate are arranged to locate the sample in proximity to the design focal position of the microscope.

4. The stage assembly of claim 2 wherein the piezoelectric actuators are
20 mounted on the Y-axis plate and engage the Z-axis plate.

5. The stage assembly of claim 4 wherein the three spaced-apart piezoelectric actuators are operable to rectilinearly translate the Z-axis plate along the Z-axis direction in increments of less than 0.05 micrometers.

5 6. The stage assembly of claim 1 wherein the Z-axis plate is mounted on the XY plate assembly for travel therewith.

7. A method for use with an optical microscope to facilitate focusing of an image comprising:

10 providing an XY plate assembly including an X-axis plate rectilinearly translatable in the X-axis direction and a Y-axis plate mounted thereon rectilinearly translatable in the Y-axis direction;

positioning a Z-axis plate on the XY assembly and mounting a sample on the plate; and

15 rectilinearly translating the Z-axis plate along the Z-axis for bringing the sample into focus.

8. The method of claim 7 wherein the rectilinear translation of the Z-axis plate includes the step of engaging the Z-axis plate with a piezoelectric mechanism.

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9. The method of claim 8 wherein the step of engaging the Z-axis plate is accomplished by piezoelectric actuators interposed between the XY plate assembly and the Z-axis plate.

5 10. The method of claim 7 wherein the step of mounting the sample includes mounting a slide insert on the Z-axis plate with the sample held thereby.